

Notice of Allowability

Application No.

10/673,843

Applicant(s)

HAUGLAND, S. MARK

Examiner

Victor J. Taylor

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 15 September 2006.
2. ☒ The allowed claim(s) is/are 1-45.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 9/15/2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

1. Claims 1-45 are pending. Therefore claims 1-45 are presented for examination.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 15 September 2006 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

Response to Arguments

3. Applicant's arguments see the amendments and arguments, filed 15 September 2006 with respect to the IDS have been fully considered and are persuasive. The objection to the IDS of 16 June 2006 is moot and has been withdrawn.
4. Applicant's arguments see the amendments and arguments, filed 15 September 2006 with respect to the specification have been fully considered and are persuasive. The objection to the specification of 16 June 2006 in view of the amendments and argument is moot and has been withdrawn.
5. Applicant's arguments see the amendments and arguments, filed 15 September 2006 with respect to the 101 rejections have been fully considered and are persuasive. The 101 objections to the claims of 16 June 2006 in view of the amendment is moot and has been withdrawn.

Prior Art

6. The prior art made of record and not relied upon is considered pertinent to applicant.

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I. Art A of Meyer et al., US Patent 5,892,361 A in class 324/338 is cited for the measurement of borehole parameters and the propagation resistivity device and modeling the response see figure 1 and the abstract.

II. Art B of Clark et al., US Patent 4,968,940 A in class 324/338 is cited for the well logging of resistivity parameters with two spaced apart transmitters and the computer processes and computations see abstract and figure 1.

Allowable Subject Matter

7. Claims 1-45 are allowed.

8. The following is an examiner's statement of reasons for allowance:

The method and apparatus for estimating electrical parameters of an earth formation using the measuring BHA tool mounted on a drill string in a borehole used to collect formation data using modeling techniques for normalizing the data and normalizing and deriving the data sets using algorithm estimating of a conditional probability distribution for a signal process in the simplified model and reapplying the renormalized data processes that are based on the computer processes to determine formation prosperities and direct the position of the BHA tool in the formations is not found in the cited art of record. Therefore;

I. The method in claim 1, for estimating the electrical parameters of the earth using a measuring device deployed in a borehole with provision for computational steps for providing a simplified model making at least one simplifying assumption about the pre-established model and with computation steps for receiving the collected formation

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data and computation processes steps for normalizing the data and normalizing and deriving the data sets, and using the algorithm for estimating a conditional probability distribution for a signal process in the simplified model, and applying the renormalized data processes that are based on the computer processes computations and using the result to guide the drill bit tool in the formation is not found in the cited art of record.

It is these limitations expressed in each of these claims and not found, taught, or suggested in the prior art of record, that makes these claims allowable over the prior art.

Claims 2-19 are dependent on the allowed independent claim 1 and are allowed at least for the reasons cited above.

II. The apparatus in claim 20, for a processor readable computer medium with processor logic used to generate and executive the instructions for estimating the electrical parameters of the earth combined with steps for using a measuring device deployed in a borehole in an earth formation wherein the provision provides for computational steps for providing a simplified model making at least one simplifying assumption about the pre-established model, and computation steps for receiving the collected formation data, and computation processes steps for normalizing the data and normalizing and deriving the data sets and using the algorithm for estimating a conditional probability distribution for a signal process in the simplified model and applying the renormalized data processes that are based on the computer processes computations and using the result to guide the drill bit tool in the formation is not found in the cited art of record.

It is these limitations expressed in each of these claims and not found, taught, or suggested in the prior art of record, that makes these claims allowable over the prior art.

Claims 21-32 are dependent on the allowed independent claim 20 and are allowed at least for the reasons cited above.

III. The method in claim 33, for estimating the electrical parameters of the earth using a measuring device deployed in a borehole with provision to collect the data using an analysis of an electrical transmitted signal with the pre established model associated with and governing the processing of the formation data, wherein the computational steps for providing a simplified model making at least one simplifying assumption about the pre-established model with the computation steps for receiving the collected formation data are combined with the computation processes steps for normalizing the data and normalizing and deriving the data sets by using the algorithm for estimating a conditional probability distribution for a signal process in the simplified model and applying the renormalized data processes that are based on the computer processes computations wherein the transformations from each predicted measurement to the corresponding renormalized measurement reflects application of one of the simplified assumptions to the predicted measurement with the steps for applying the data set to the model in order to estimate the electrical parameter of the earth formation and using the result to guide the drill bit tool in the formation is not found in the cited art of record.

It is these limitations expressed in each of these claims and not found, taught, or suggested in the prior art of record, that makes these claims allowable over the prior art.

Claims 34-41 are dependent on the allowed independent claim 33 and are allowed at least for the reasons cited above.

IV. The method in claim 42 for estimating the electrical parameters of the earth using a measuring device deployed in a borehole with provision for computational steps and providing a simplified model with steps for making at least one simplifying assumption about the pre-established model, and with computation steps for receiving the collected formation data and combined with the computation processes steps for normalizing the data and normalizing and deriving the data sets by using the algorithm for estimating a conditional probability distribution for a signal process in the simplified model wherein the renormalized data set follows the weighted sums algorithm and includes the transformation and point-dipole data over the prescribed trajectories and applying the renormalized data processes to the simplified model to estimate the electrical parameter that are based on the computer processes computations and using the result to guide the drill bit tool in the formation is not found in the cited art of record.

It is these limitations expressed in each of these claims and not found, taught, or suggested in the prior art of record, that makes these claims allowable over the prior art.

Claims 43-45 are dependent on the allowed independent claim 42 and are allowed at least for the reasons cited above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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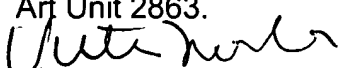
Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor J. Taylor whose telephone number is 571-272-2281. The examiner can normally be reached on 8:00 to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571-272-2863. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Victor J. Taylor
Examiner
Art Unit 2863.


9/22/2006


John Barlow
Supervisory Patent Examiner
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